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GB A 2127060 US 4096790

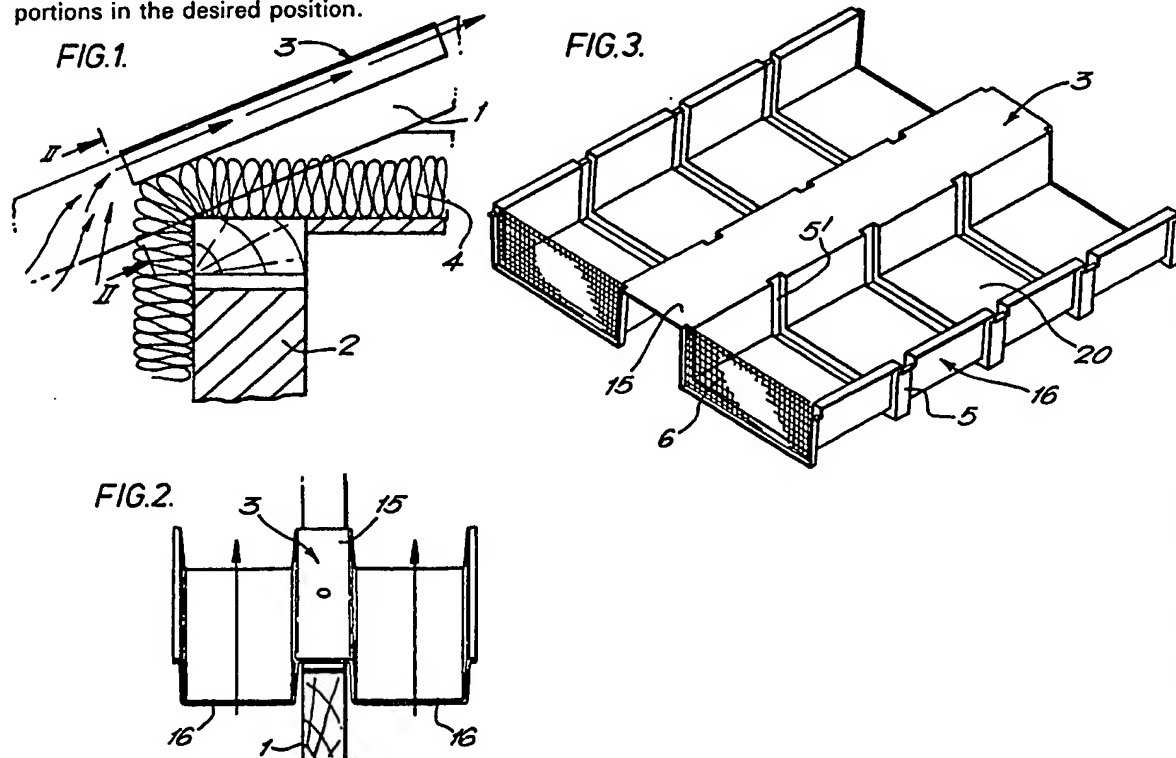
Brochure entitled "REDLAND REDVENT" Redland
Roof Tiles Limited, Reigate Surrey RH2 0 JS dated
APRIL 1984 (Relvent Eaves Ventilator)

(58) Field of search

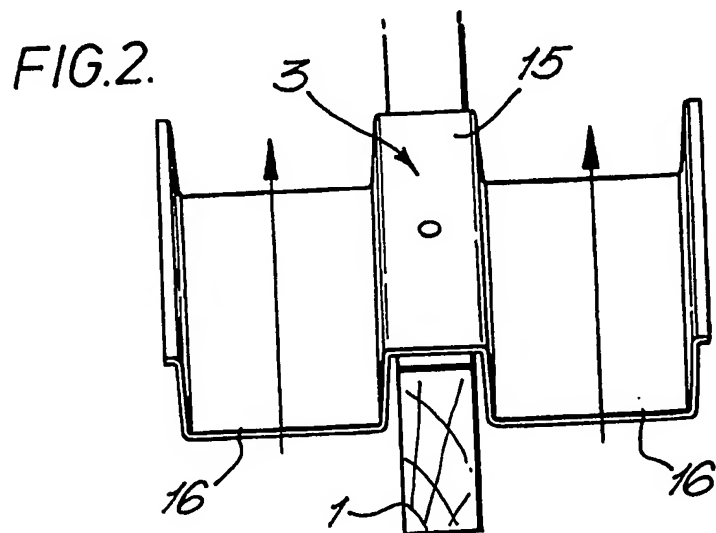
E1D

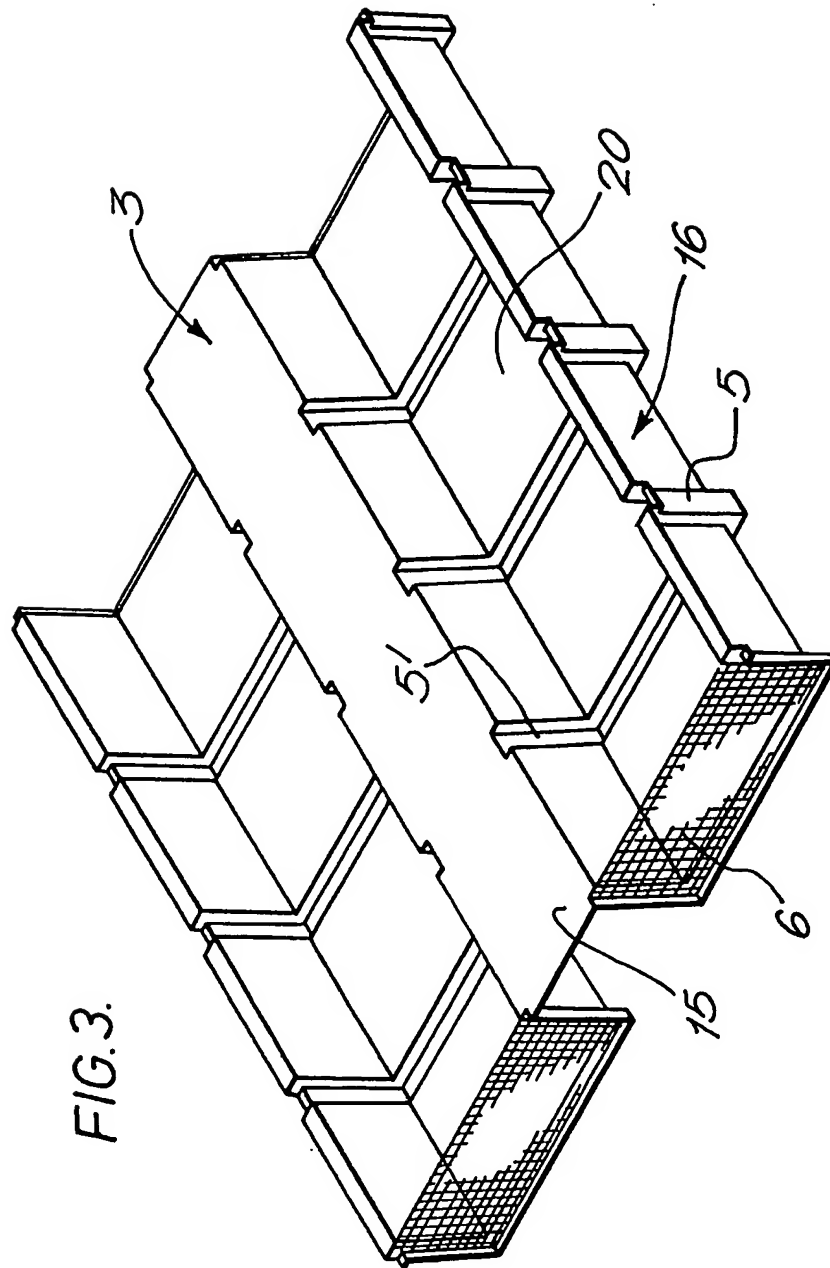
(54) Roof ventilation

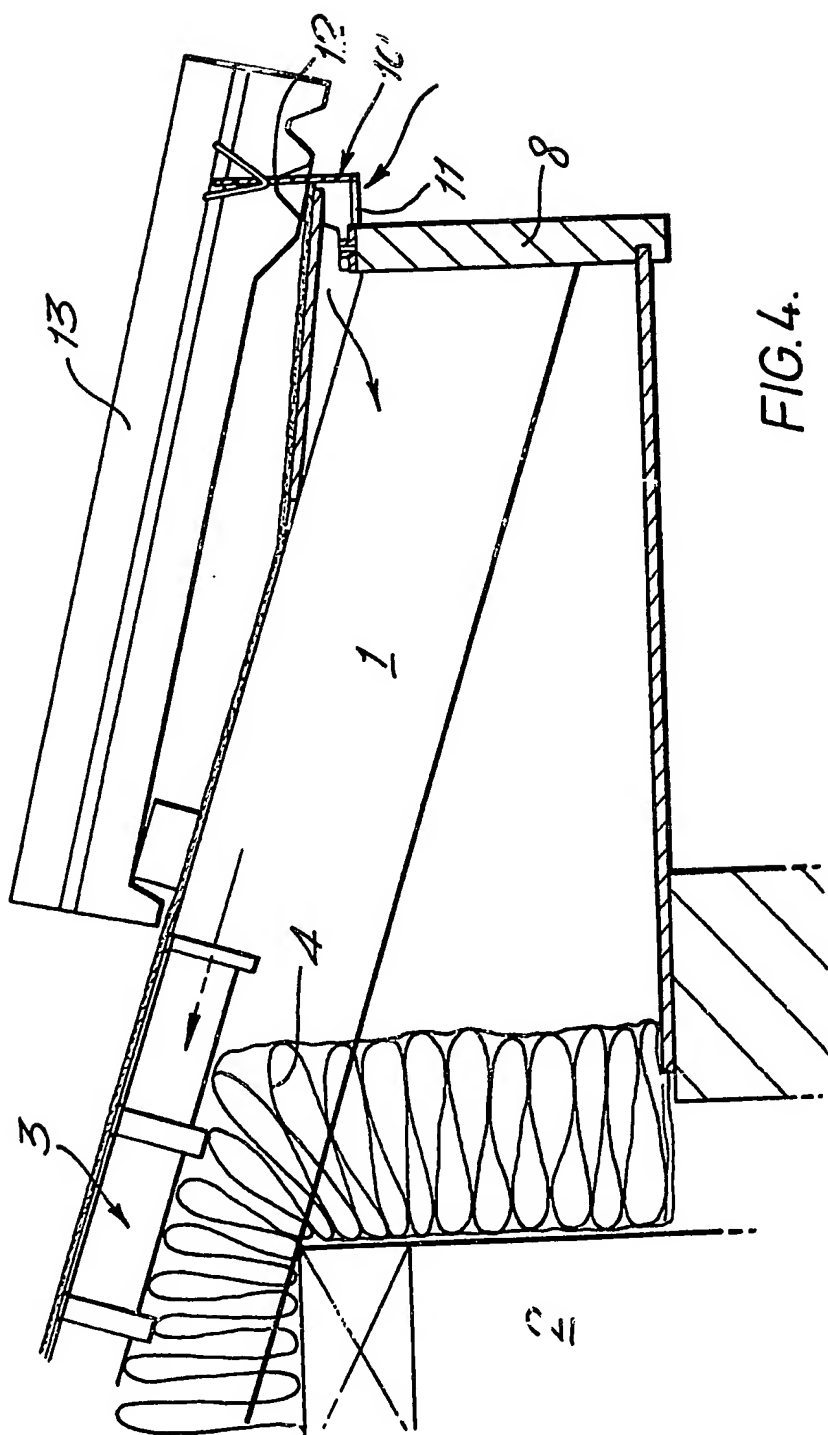
(57) Ducting members 3, secured to and saddling the rafters 1 at the eaves of the building, include duct forming portion 16, each side of a central portion 15 of inverted "U" cross-section, arranged to define air flow passages each side of the rafters 1, ensuring adequate ventilation, which might otherwise be impaired by insulating material 4 pushed into the eaves from inside the roof. Members 3 extend only partially between rafters 1, and are sufficiently self-supporting to maintain the duct-forming portions in the desired position.



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SPECIFICATION

Roofing systems

5 This invention relates to roofing systems.

It is important in any roofing system that the interior of the roof space is adequately ventilated in order to reduce the effects of condensation which can cause premature deterioration of the rafters and other roof components. To this end it is known to provide ventilating means at the eaves of a roof whereby the flow of air is permitted from outside the roof to the interior roof space. One such means is described in British Patent Specification No. 2131845 wherein a spacer member is interposed between the roof covering and the fascia board at the eaves which defines ventilation openings permitting the flow of air into the roof space. Other such proposals include the provision of ventilating apertures in the fascia board itself or in the underlying soffit.

However, while such means allow air to flow into the space defined behind the soffit and fascia boards, it is important that air can flow thereafter into the remainder of the roof space, and problems have been encountered in this regard as a result of the roof insulating material, typically a "quilt" of fibre-glass or other like material, which is generally pushed firmly into the eaves from inside the roof, inhibiting the flow of air into the roof space. In order to overcome this problem, it is known to provide ducting members which are secured to and extend between the rafters adjacent the eaves. An example of such a ducting member or baffle is described in U.S. Patent No. 4,096,790. Such members are effective to space the insulating material from the roof covering so as to define air flow passages there between. However, such ducting members have the disadvantage that they do not adapt to different roof configurations with varying spacings between the rafters, and typically one member will only be suitable for use with a limited number of roofing systems.

According to the invention there is provided a roofing system including rafters with ducting members secured thereto adjacent the eaves, each said ducting member being in the form of a tray comprising upwardly open duct-forming portions interconnected by a central portion of inverted "U" cross-section, the central portion saddling a single rafter with a duct forming portion on either side thereof defining flow passages which provide ventilation of the interior roof space, wherein the duct forming portions extend laterally only partially between the rafters and each said member is sufficiently self supporting to maintain the duct forming portions substantially in the desired configuration thereof.

In accordance with the invention therefore a single ducting member is secured to and

saddles a respective rafter and as such the members may be incorporated in a variety of different roofing systems wherein the rafters are spaced apart at different distances. Roof insulating material pushed into the eaves of the roof from inside may inhibit the air flow into the roof space in the regions between the rafters and ducting members, but adequate ventilation still occurs via the flow channels defined by the duct forming portions of the members either side of the rafters.

Whilst the ducting members in accordance with the invention are sufficiently self supporting to maintain the duct forming portions substantially in their desired positions either side of the rafters, depending on the material from which they are made there may be some tendency for such portions to sag under their own weight. However, the engagement of the insulating material beneath each ducting member will be effective to urge the duct forming portions upwardly against the roof covering and this significantly reduces or prevents sagging of such portions.

In a preferred embodiment, each ducting member is generally "W" shaped in cross-section and thus includes a single duct forming portion each side of the rafter to which it is mounted. The ducting members may be formed from a substantially rigid material, e.g. extruded plastics. Alternatively, the members may be formed, e.g. by moulding, from a light weight sheet material of greater flexibility. In this case, the flexibility of the material may be such that there is an increased tendency for the duct forming portions either side of the rafters to sag, and preferably therefore each ducting member includes strengthening ribs to provide additional support for the duct forming portions.

Accordingly, the invention extends to a ducting member adapted to be secured to a rafter in a roofing system, such member being in the form of a tray molded from light weight sheet material and comprising upwardly open duct-forming portions interconnected by a central portion of inverted "U" cross-section adapted to saddle a roof rafter in use, there being a plurality of longitudinally spaced, laterally directed strengthening ribs provided at least in the regions of the inner edges of the duct-forming portions arranged to cooperate with the side edges of a roof rafter in use, whereby to maintain the base of each duct forming portion substantially at right angles to the side edges of the rafter.

Where a roofing system in accordance with the invention includes an arrangement of soffit and fascia at the eaves, means are preferably provided whereby air may flow from outside the roof into the space behind the soffit and fascia. This may be achieved by providing ventilation apertures in the soffit and/or fascia

board. Preferably, however, the system includes ventilation means which comprise a spacer member interposed between the roof covering and the fascia board, said member comprising a first portion which extends outwardly from the fascia board and includes downwardly facing ventilation openings, and an upstanding free edge portion which either directly or indirectly supports the roof covering and spaces the covering from the top of the fascia board.

Certain embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawing, wherein:

Figure 1 is a sectional view of part of the eaves of a roofing system including a ducting member;

Figure 2 is a sectional view taken along line II-II in *Fig. 1*;

Figure 3 is a perspective view of an alternative embodiment of ducting member, and

Figure 4 is a sectional view of part of the eaves of a roofing system including the ducting member shown in *Fig. 3*.

Referring firstly to *Figs. 1* and *2*, a roofing system includes rafters 1 which are supported adjacent the eaves by the internal part 2 of an outside cavity wall of the building, as is conventional. For clarity the roof covering, e.g. tiles or slates, which is secured to the rafters, is omitted from the drawings. Secured to and saddling each rafter as shown in *Fig. 2* is a ducting member 3 in the form of a substantially rigid extrusion which is generally "W" shaped in cross-section. Each ducting member includes a central portion 15 of inverted U cross-section and duct forming portions 16 which define either side of each rafter a ventilation channel. The member 3 is sufficiently rigid for the duct forming portions to be self supporting. Thus, the roof insulating material 4 which is typically pushed firmly into the eaves and may as shown in *Fig. 2* extend beyond the inner wall 2 of the cavity, is spaced from the roof covering either side of each rafter by the ducting members. Therefore, although the insulating material may be pressed firmly against the roof covering at the regions between the rafters and ducting members, as shown by the arrows in *Fig. 1*, air may flow into the roof space through the channels formed either side of the rafters and adequate ventilation is achieved.

Fig. 3 illustrates an alternative embodiment of ducting member 3 which differs from that shown in *Figs. 1* and *2* in that it is formed from a light weight plastics sheet material by a vacuum a moulding technique. To minimise the tendency of the duct forming portions 16 of the ducting member of *Fig. 3* to sag under their own weight, a plurality of laterally extending, longitudinally spaced strengthening ribs 5 are provided. In the illustrated embodiment, the ribs 5 are in the form of outwardly

pressed generally "U" shaped channels, although it will be appreciated that other rib configurations could be used, for example inwardly pressed channels. When the member is mounted to a rafter such that the inverted "U"-shaped portion 15 saddles the rafter, the ribs 5' provided on the side walls of portion 15 engage the side edges of the rafter. The effect of this is to maintain the base 20 of each duct forming portion substantially at right angles to the side edges of the rafter. It will be appreciated that the same effect could be achieved by providing strengthening ribs only in the regions of the inner edges of the portions 16, i.e. on the side walls of portion 15 and adjacent the inner edge of the base 20 of each duct forming portion 16. The member 3 shown in *Fig. 3* is additionally provided with and a mesh 6 adapted to prevent insects entering the interior of the roof space. *Fig. 4* illustrates the outer part of the eaves of a roofing system incorporating a ducting member 3 as shown in *Fig. 3*. A fascia board 8 is secured to the ends of the rafters, and a soffit 9 extends between the outside wall and the fascia board 8. A spacer member 10 is interposed between the fascia board 8 and the lowermost row of roof tiles 13. The spacer member includes a first portion 11 extending outwardly from the fascia board and an upstanding free edge portion 12 which supports the tiles 13. The portion 11 includes a plurality of ventilation openings such that air may flow from outside the roof into the space defined behind the soffit and fascia and thereafter into the interior roof space via the channels defined by the ducting member 3, as shown by the arrows in *Fig. 4*.

105 CLAIMS

1. A roofing system including rafters with ducting members secured thereto adjacent the eaves, each said ducting member being in the form of a tray comprising upwardly open duct-forming portions interconnected by a central portion of inverted "U" cross-section, the central portion saddling a single rafter with a duct forming portion on either side thereof defining flow passages which provide ventilation of the interior roof space, wherein the duct forming portions extend laterally only partially between the rafters and each said member is sufficiently self supporting to maintain the duct forming portions substantially in the desired configuration thereof.

2. A roofing system as claimed in claim 1 wherein each ducting member is generally "W" shaped in cross-section and includes a single duct forming portion each side of the rafter to which it is mounted.

3. A roofing system as claimed in claim 1 or 2 wherein each ducting member is formed from a substantially rigid material.

4. A roofing system as claimed in Claim 1 or 2 wherein each ducting member is formed

from a light weight sheet material and includes strengthening ribs adapted to provide additional support for the duct forming portions.

- 5 5. A ducting member adapted to be secured to a roof rafter in a roofing system, such member being in the form of a tray molded from light weight sheet material and comprising upwardly open duct-forming portions interconnected by a central portion of inverted "U" cross-section adapted to saddle a roof rafter in use, there being a plurality of longitudinally spaced, laterally directed strengthening ribs provided at least in the regions of inner edges of the duct-forming portions arranged to cooperate with the side edges of a roof rafter in use whereby to maintain the base of each duct forming portions substantially at right angles to the side edges of the rafter.

- 20 6. Roofing systems substantially as herein described with reference to any of the accompanying drawings.

- 25 7. Ducting members substantially as herein described with reference to any of the accompanying drawings.

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